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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,168	02/11/2004	Naoto Abe	00862.021864.1	1219

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EXAMINER

SHENG, TOM V

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/775,168	Applicant(s) ABE ET AL.	
	Examiner Tom V. Sheng	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/1/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 43, 45, 48, 50 and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chee et al. (US RE38108 E), hereinafter Chee, in view of Bui et al. (US 6,934,772 B2).

As for apparatus claims 43, 53, 54 and associated method claims 48, 55 and 56, Chee teaches a display apparatus (notebook 10; fig. 1) comprising:

a display panel (LCD 12; column 3, lines 66-67) including a plurality of display elements (inherent liquid crystal elements);

display control means (video display controller 30; fig. 2 and 3; column 4, line 20 through column 5, line 50) for controlling said display panel in a normal display mode (inherent), a first power saving mode (PSM 1, as defined in register 60; fig. 4; column 5, lines 51-67), a second power saving mode (PSM 2 or PSM 3) and a third power saving mode (PSM 4); and

mode transition means (power saving controller 58, PLL timers 66, 68, pin PS1 and PS2, of the video display controller 30; fig. 3 and 6) for causing said display panel to shift to the first power saving mode or the third power saving mode from a normal mode based on an instruction of a user (for example, closing the notebook cover or engaging a shutdown switch engages PSM 1 or PSM 4; column 6, lines 15-34), and

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causing said display panel to shift automatically to the second power saving mode from the normal mode based on status of said display panel (when inactivity is determined over a selected time interval, mode PSM 2 or PSM 3 would be entered; column 6, lines 1-14 and 35-52).

Further, Chee further teaches that the power saving features of each mode is configurable. Specifically as applicable to LCD, power saving features such as memory clock on/off (Mclk), pixel clock on/off (Pclk), LCD backlight on/off (LCDbl), LCD on/off (Display off), slower pixel clock (Pclk slow), and reduced gray scale (REDUCE GS) are programmable with respect to each of the power saving modes. See column 7, line 11 through column 8, line 4. Thus, for example, the first power saving mode (PSM 1) can have a slow PCLK, the third power saving mode (PSM 4) can have a reduced gray scale, and the second power saving mode (PSM 2 or 3) can have the LCD backlight turned off.

Chee does not specifically teach wherein the first power saving mode is a mode in which said display panel displays an image, since Chee's first power saving mode is triggered when the user closes the notebook cover or engages a shutdown switch, either of which would shut off power and not meant for continuous display of an image.

Bui teaches controlling the brightness of a display to reduce power consumption through various means. Specifically, Bui teaches controlling the brightness level of the display screen via corresponding backlight through a software control panel. For example, four different brightness controls of High (75%), Medium (50%), Drain (100%),

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and Custom (0-100%) are contemplated. See column 3, line 58 through column 4, line 4.

One of ordinary skill in the art would recognize that by incorporating a user instruction controlled backlight of Bui into Chee's display would provide further options in power savings in display. Thus, for example, the first power saving mode can be a user-controlled backlight of 75% brightness, the second power saving mode can be a slow PCLK mode, and the third power saving mode can be a reduced gray scale mode (Thus all power saving modes can be displaying images).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate Bui's user-controlled backlight into Chee's display, resulting in further options in display power saving.

As for claims 45 and 50, since modified Chee teaches both configurable parameters for the display power saving modes and the modes being user controllable, it would have been obvious, for one of ordinary skill in the art, to further use a slower PCLK/pixel clocks (i.e. slower frequency of said drive clock of said display panel) in the first power saving mode or the second power saving mode whenever a slower display speed is tolerable in exchange for lower power consumption.

3. Claims 44 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chee and Takasu as applied to claim 43 and 48 above, and further in view of Okumura (US 6,331,844 B1).

As for claims 44 and 49, modified Chee does not teach controlling drive current of each of the display elements in the first or second power saving modes. Okumura teaches power saving in a type of LCD apparatus, where power saving is attained by controlling the current signal (fig. 8; column 13, line 25 through column 14, line 25). Therefore, it would have been obvious to one of ordinary skill in the art to further incorporate Okumura's current control setup, when power control using current signal is desired.

4. Claims 46 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chee and Takasu as applied to claim 43 and 48 above, and further in view of Miyamoto (US 6,005,559).

As for claims 46 and 51, modified Chee does not teach controlling drive voltage of the display panel in the first or second power saving mode. Miyamoto teaches a power conserving display. In particular, Miyamoto's power saving consists of decreasing quantity of backlight, decreasing driving voltage, and increasing the refreshing scanning period (fig. 1; column 3, line 65 to column 4, line 47). It would have been obvious to one of ordinary skill in the art to at least incorporate Miyamoto's control of driving voltage in Chee's notebook computer, as a further compatible option in the control of display power saving.

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5. Claims 47 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chee and Takasu as applied to claim 43 and 48 above, and further in view of Ho (US 5,757,365).

As for claims 47 and 52, modified Chee teaches displaying images in all three power saving modes and Chee teaches using a slower pixel clock in the second power saving mode resulting in lower power consumption, which also reads on claimed mode in which the electric power supplied to said display panel is decrease because broadly speaking a lower power consumption means a lower power supply is required (the claims do not define the way in which power is supplied).

As analyzed above, Chee further teaches entering the third power saving mode when inactivity is determined over a selected time interval (column 6 lines 1-14 and 35-52). However, Chee does not teach claimed third power saving mode in which the image data representing the image to be displayed is modified to save the electric power of said display panel. Ho teaches a computer with a power save controller 110 (fig. 4). Specifically, Ho teaches that upon sensing absence of update data for two full frames (of display), a re-mapping of the grey-scale code to a simple black-and-white two state code occurs. This re-mapped data is used for refresh and results in a power down (column 4 line 63 through column 5 line 17). One of ordinary skill in the art would recognize that Ho's power down mode could similarly be applied to Chee's third power saving mode because it provides a way to lower power consumption in a display only when an image is fixed.

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Therefore, it would have been obvious to one of ordinary skill in the art to incorporate Ho's power down mode into Chee's third power saving mode because of the power saving whenever an image is fixed.

Response to Arguments

6. Applicant's arguments with respect to claims 43-56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

